

## Claims

- [c1] A method for the manufacture of sub-wavelength structures on a substrate, the method comprising the steps of:
  - providing a deformable photoresist on the substrate;
  - forming a hydrophilic stamp made of a material having a higher refractive index than the photoresist, said stamp carrying wave guiding structures;
  - imprinting said wave guiding structures into the deformable photoresist by bringing said stamp and the substrate in close contact;
  - coupling light into the wave guiding structures, thereby creating evanescent waves to expose the photoresist;
  - and
  - developing the photoresist.
- [c2] A method according to claim 1, wherein the photoresist is a positive photoresist.
- [c3] A method according to claim 1, wherein the photoresist is a negative photoresist.
- [c4] A method according to claim 1, wherein said wave guiding structures are formed by a mask production method.

- [c5] A method according to claim 1, wherein said wave guiding structures are formed by a replica method from a precursor.
- [c6] A method according to claim 1, wherein said material comprises poly-(dimethyl)siloxane.
- [c7] A method according to claim 1, wherein said coupling is performed using a grating structure.
- [c8] A method according to claim 1, wherein said coupling is performed using a prism structure.
- [c9] A method according to claim 1, wherein said coupling is performed via optical fiber connectors.
- [c10] A method according to claim 1, further comprising covering said stamp with a metal layer.
- [c11] A method according to claim 10, wherein said metal layer comprises chromium.
- [c12] A method according to claim 1, wherein said sub-wavelength structures have a size which is variable in accordance with the material of said stamp.
- [c13] A method according to claim 1, wherein said sub-wavelength structures have a size which is variable in accordance with the material of the photoresist.

- [c14] A method according to claim 1, wherein said sub-wavelength structures have a size which is variable in accordance with a wavelength of light used to expose the photoresist.
- [c15] A method according to claim 1, wherein critical dimensions of said sub-wavelength structures depend on an entrance depth of said evanescent waves.